OPERATING SUMMARY

INGERSOLL

WATER POLLUTION CONTROL PLANT

1973

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

INGERSOLL

WATER POLLUTION CONTROL PLANT

MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

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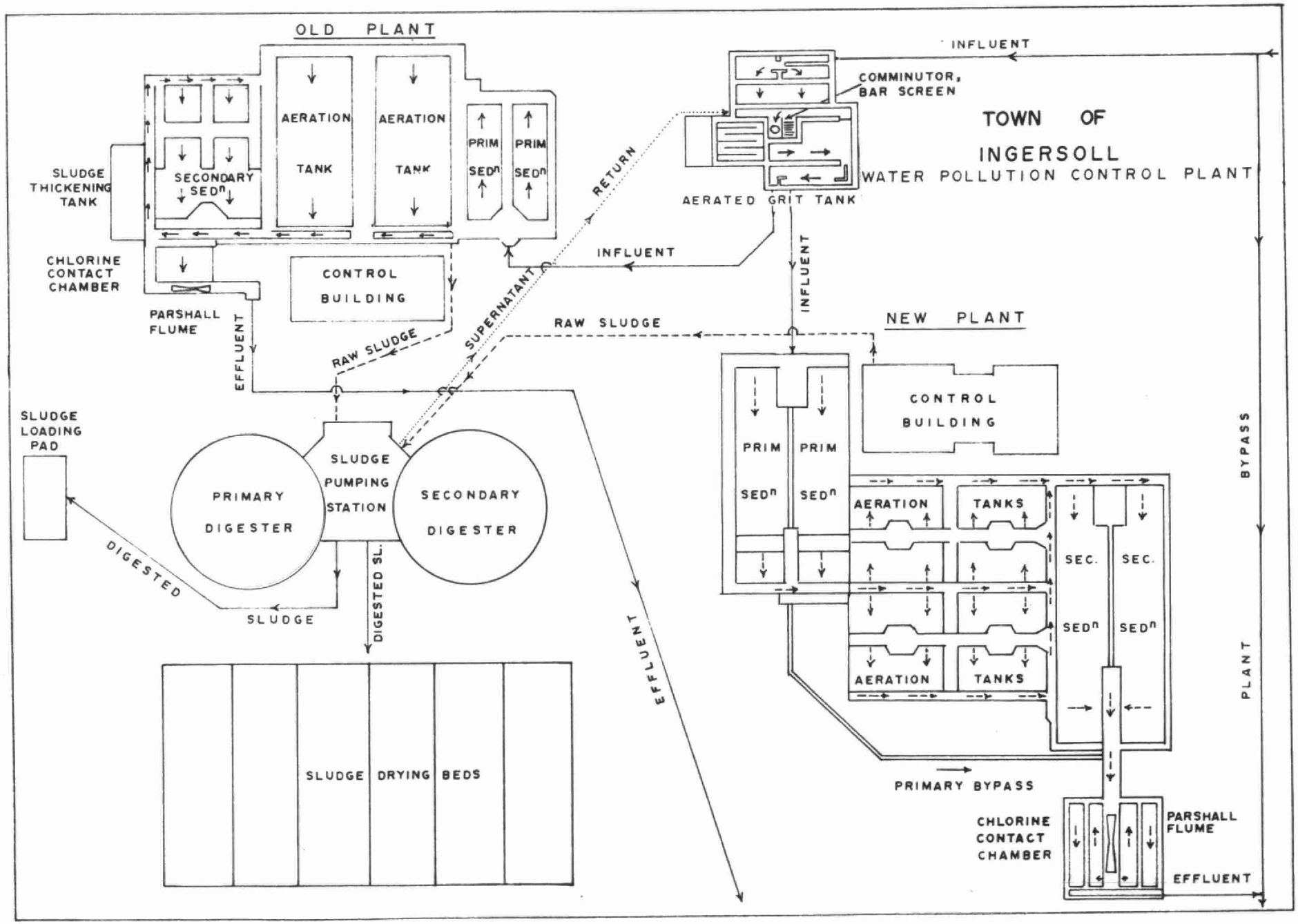
OLD PLANT
INFLUENT
COMMINUTOR, BAR SCREEN
TOWN OF
INGERSOLL
WATER POLLUTION CONTROL PLANT
AERATION TANK
AERATION TANK
PRIM SEDn
PRIM SEDn
SECONDARY SEDn
SLUDGE THICKENING TANK
RETURN
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DIGESTED SL.
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SLUDGE DRYING BEDS
PRIMARY BYPASS
CHLORINE CONTACT CHAMBER
PARSHALL FLUME
EFFLUENT

DESIGN DATA

Project Town of Ingersoll WPCP

Project No:	1-0076-67
Treatment:	Conventional Activated Sludge
Design Flow:	2.25 MGD (Old Plant 0.75 MGD - New plant 1.5 MGD)
BOD:	Raw sewage 200 mg/l
SS:	Raw sewage 200 mg/l

PRETREATMENT (Common)

BAR SCREENS:
Manually cleaned, in wet well influent channel

RAW SEWAGE PUMPING:
Two, size 1120 USGPM
Two, size 2240 USGPM

COMMINUTION:
One comminutor, Capacity 6.75 MGD

GRIT REMOVAL:
Aerated grit tank
Size: 11'8" x 14' x 10' awd
Volume: 10500 I. Gal. Detention: 1.8 min.

OLD PLANT

PRIMARY SEDIMENTATION:
Two, each 12' x 40' x 10' swd (avg)
Volume: 60,000 I. Gal. Detention: 1.9 hours
Overflow rate: 780 I. Gal/day/sq. ft.

AERATION TANKS:
Two, each 30' x 54' x 15' swd (avg)
Volume: 300,000 I. Gal. Detention: 9.7 hours
Fine bubble diffusion
Blowers: Two, size: each 764 cfm at 7.5 psi

SECONDARY SEDIMENTATION:
Two, 15' x 45' x 12' swd (avg)
Volume: 100,000 I. Gal. Detention: 3.2 hours
Overflow rate: 550 gal/day/sq. ft.

CHLORINE CONTACT CHAMBER:
Size: 18' x 12' x 11' swd
Volume: 13,000 I. Gal. Detention: 25 min.

SLUDGE HOLDING TANK:
Size : 11' x 25' x 12'6" swd
Volume: 22,000 I. Gal.

NEW PLANT

PRIMARY SEDIMENTATION:

Two, 16' x 65' x 11' swd (avg)
Volume: 142,000 I. Gal.
Detention: 2.3 hours
Overflow rate: 720 I. gal/ft^2/day

AERATION TANKS:
Two, each with two cells 30' square x 13' swd
Volume: 270,000 I. Gal.
Detention: 4.3 hours

SECONDARY SEDIMENTATION:
Two, each 16' x 78' x 12' swd
Volume: 187,000 I. Gal.
Detention: 3 hours
Overflow rate: 600 I. Gal/ft^2/day

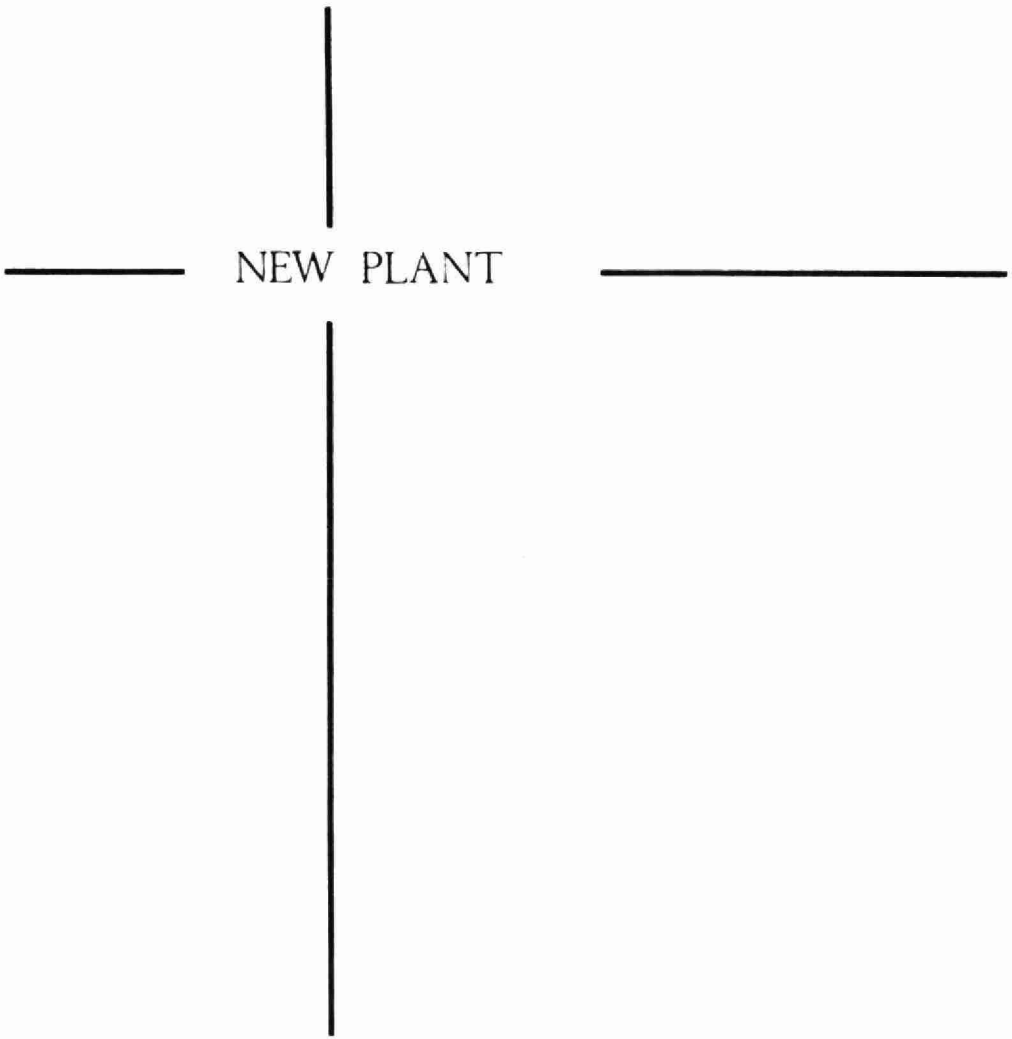
CHLORINE CONTACT CHAMBER:
Size: 26'6" x 24' x 10'3" swd
Volume: 41000 I. Gal.
Detention: 35 min.

SLUDGE HANDLING (Common)

PRIMARY DIGESTER:
Size 45' dia. x 21'3" swd
Volume: 36,000 ft^3.

SECONDARY DIGESTER:
Size: 45' dia. x 20'3" swd
Volume: 35, 000 ft^3

SLUDGE DRYING BEDS:
Six, each 20' x 75'
Area: 9000 ft^2.

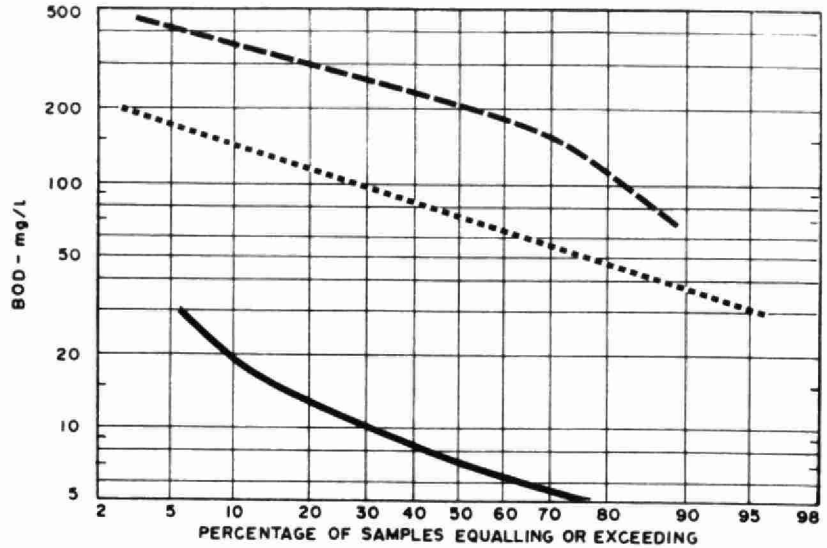

NEW PLANT

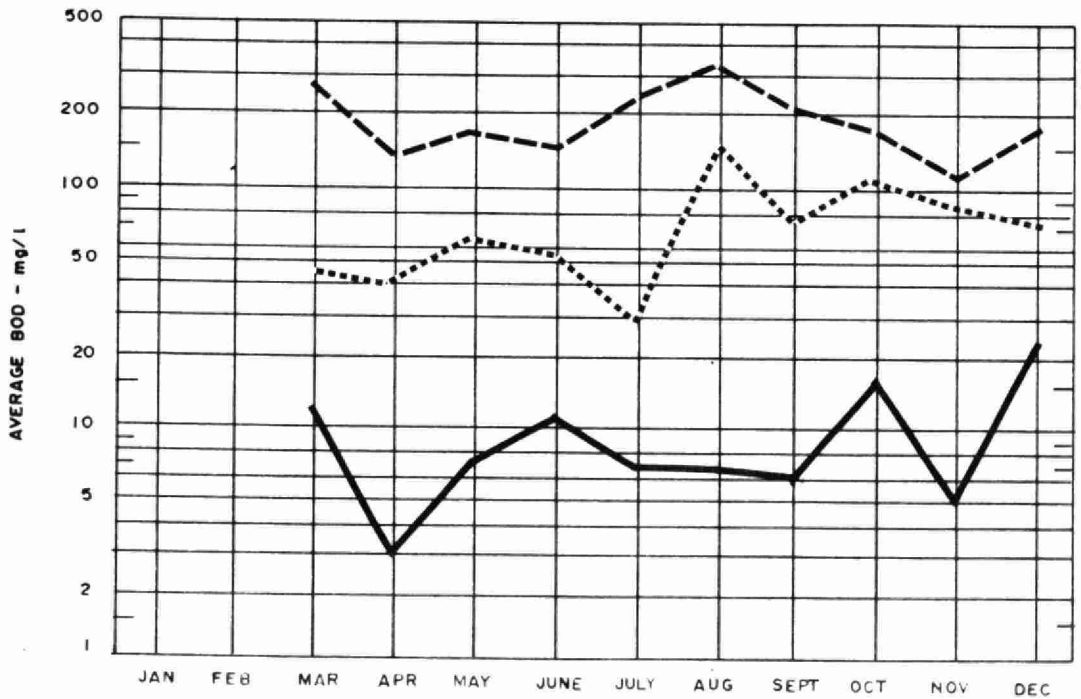
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN													
FEB													
MAR	1.36 *			280	12	96	3.7	950	40	96	12.5	2.3	1.7
APR	34.93	1.16		140	3	98	47.8	480	55	89	148.4	5.8	1.1
MAY	28.78	0.80		167	7	96	46.0	232	16	93	62.2	4.6	0.4
JUNE	24.20	0.81		147	11	92	32.9	345	26	92	77.2	6.1	0.9
JULY	24.69	0.80		240	7	97	57.5	340	10	97	31.5	7.5	1.6
AUG	24.19	0.78		324	7	98	76.7	356	6	98	84.7	8.8	1.1
SEPT	23.75	0.79		205	6	97	47.3	405	10	98	93.8	5.0	0.4
OCT	24.89	0.80		174	15	91	39.6	246	10	96	58.7	11.3	3.3
NOV	24.40	0.85		121	5	96	29.5	212	75	65	34.8	3.7	0.8
DEC	20.65	0.67		171	24	86	30.3	216	42	81	35.9	5.4	0.3
TOTAL	292.00	-	-	-	-	-	411.3	-	-	-	689.7	-	-
AVG.		0.83	MAXIMUM	189	11	95	41.1	304	33	90	70	6.5	1.2
No. of Samples	-	-	-	33	32	-	-	36	35	-	-	29	29

* 5 days flow

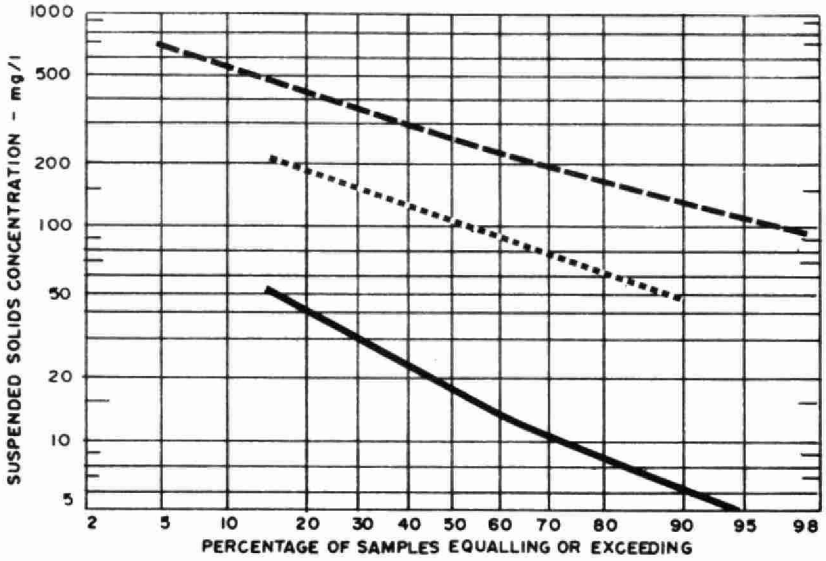
BIOCHEMICAL OXYGEN DEMAND

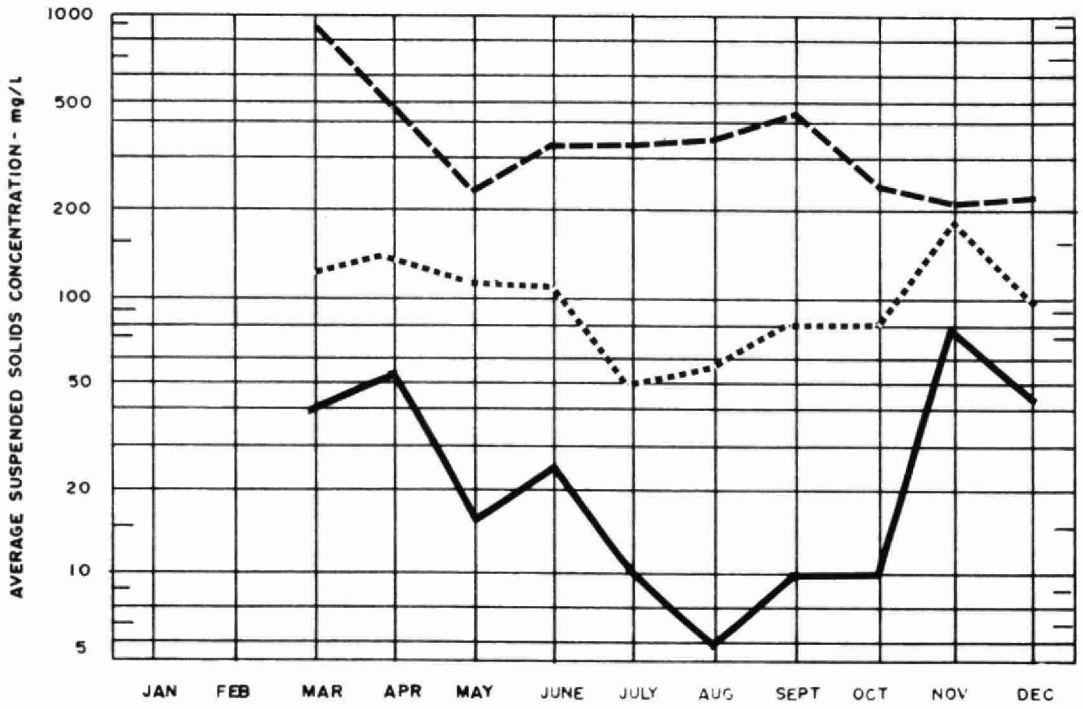




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

SUSPENDED SOLIDS





PLANT INFLUENT
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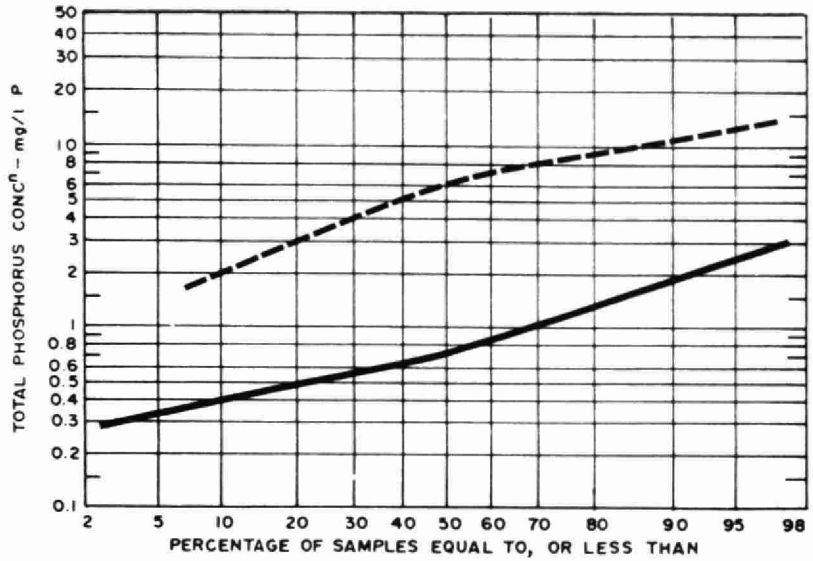
PHOSPHORUS

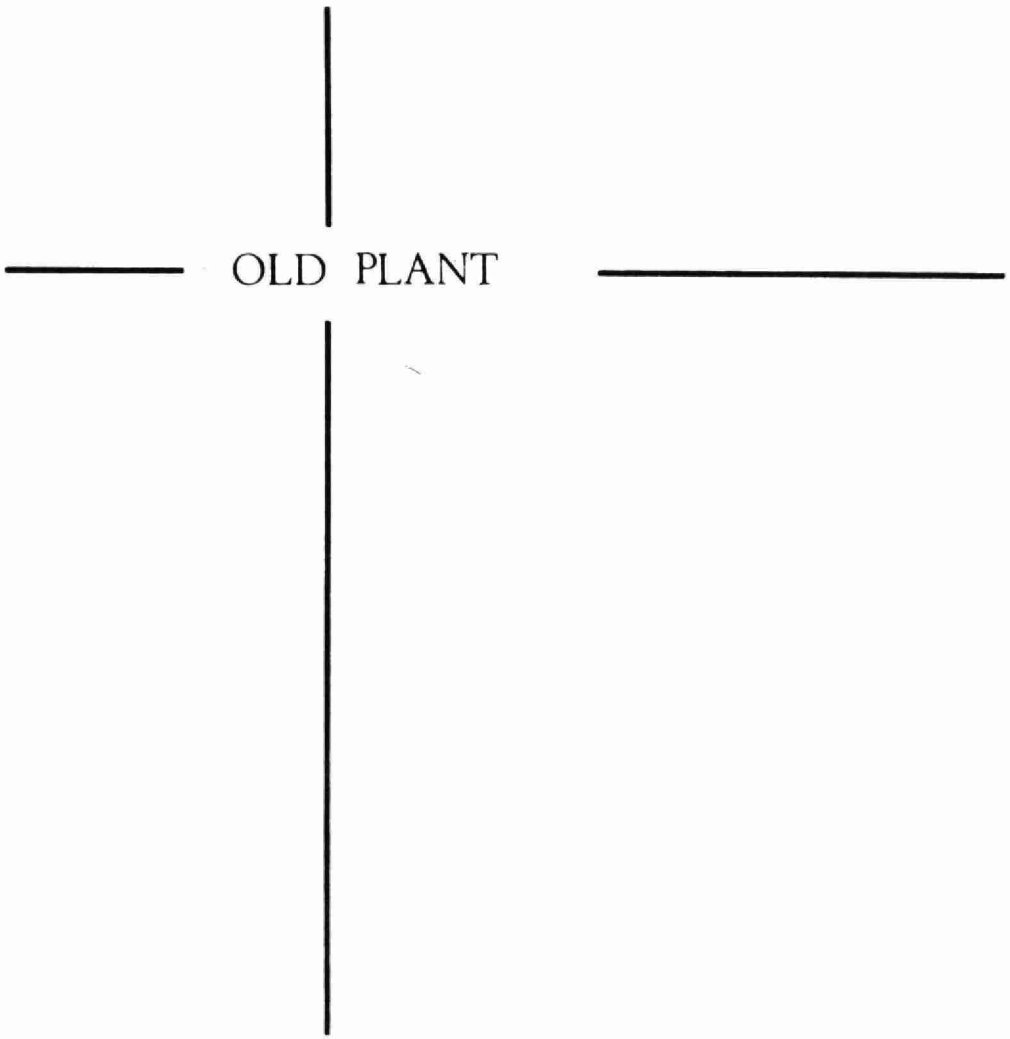


PLANT INFLUENT

PLANT EFFLUENT

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN																
FEB																
MAR	0	0.2		44	120	3090										
APR	0	1.6		42	130	3970	0.04		0			6.0				36
MAY	0	1.4		73	105	3740	0.06		351			48.0				288
JUNE	12	1.4		66	102	3430	0.06		279			32.0				192
JULY	0	1.3		30	50	3280	0.03		302			127.0				756
AUG	0	1.0		149	58	3640	0.11		354			85.0				508
SEPT	24	1.0		77	80	2890	0.08		11							0
OCT	20	0.9		104	80	2680	0.11		220			0	0.10			0
NOV	24	1.0		87	174	3420	0.06		89	3.3		0	0.21			0
DEC	64	0.9		72	95	3080	0.08		157	3.2		0	1.28			0
TOTAL	148	10.7	-	-	-	-	-	-	1762	-	-	298	-	-	-	1780
AVG.	0.5 cu. ft/mil gal			88	105	3420	0.07			3.3			0.53			

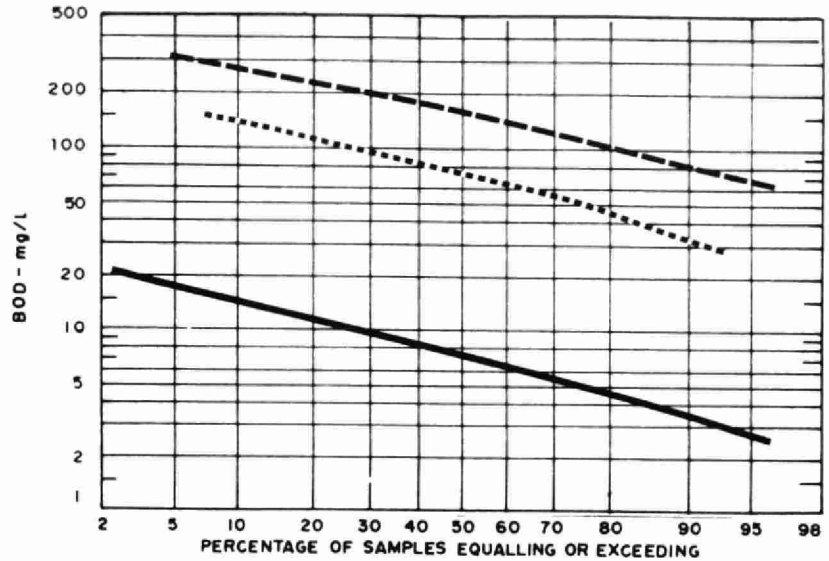

OLD PLANT

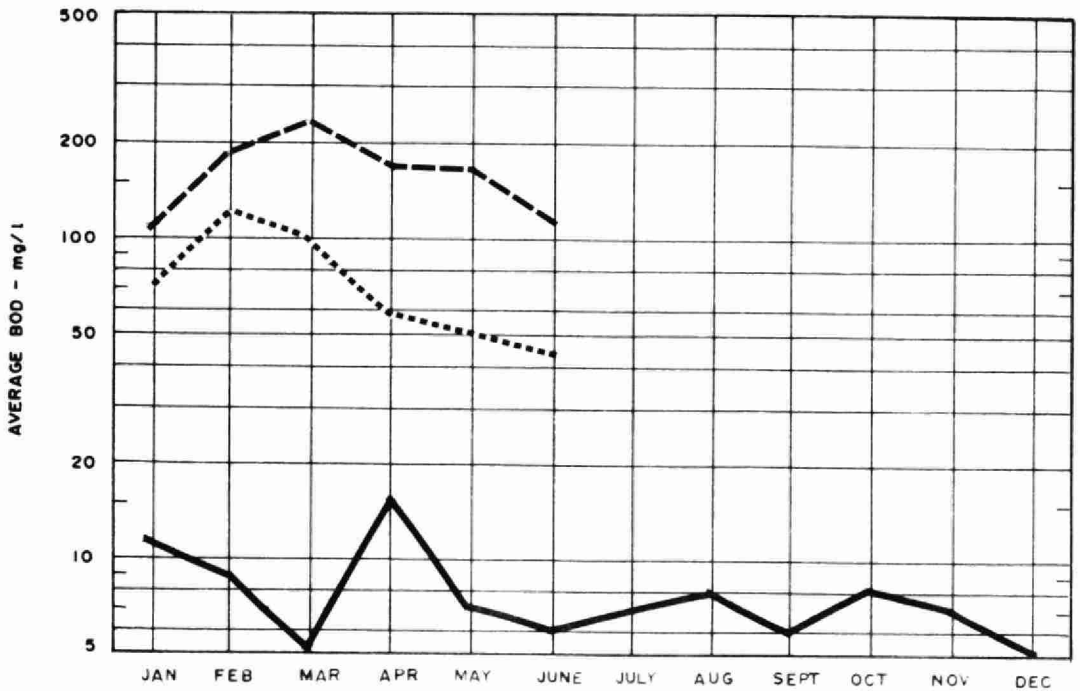
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN	26.55	0.86	1.0	109	11	90	26	170	17	90	41	8.9	1.9
FEB	23.14	0.83	0.9	190	9	95	42	260	12	95	57	4.1	0.6
MAR	27.72	0.89	1.0	237	5	98	64	307	7	98	83	6.2	0.4
APR	12.64 *	0.49	0.9	174	16	91		407	30	93		6.5	0.7
MAY	3.69 *			170	7	96		310	30	90		4.5	0.7
JUNE	5.27 *			110	6	95		370	12	97		6.5	0.7
JULY	5.78 *												
AUG	8.31 *				8				5				0.6
SEPT	7.71				6				10				0.5
OCT	8.56				8				1				0.3
NOV	5.05 *				7				20				0.4
DEC	7.70 *				5				10				0.4
TOTAL	160.60+	-	-	-	-	-		-	-	-		-	-
AVG.		0.44	MAXIMUM	168	9			294	14			6.3	0.7
No. of Samples	- -	-	-	17	27	-	-	17	28	-	-	17	28

* flow total for part month only
\+ estimated total

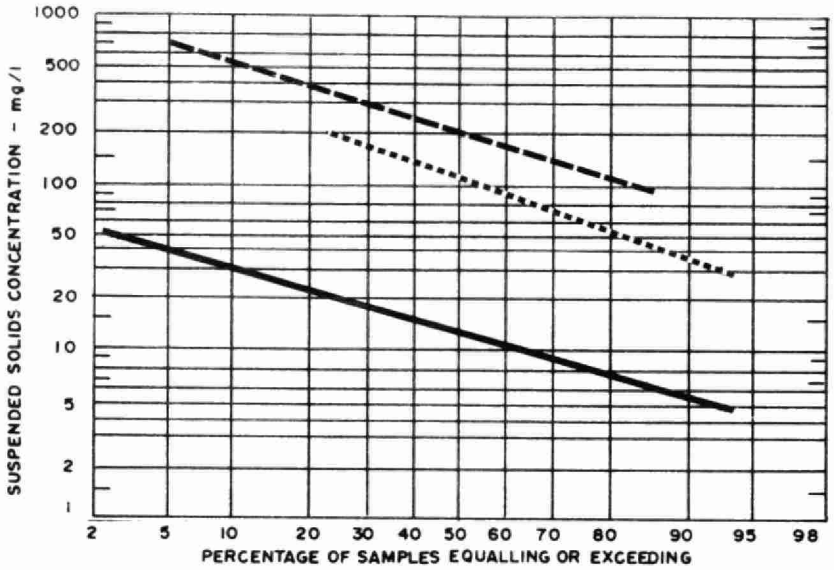
BIOCHEMICAL OXYGEN DEMAND

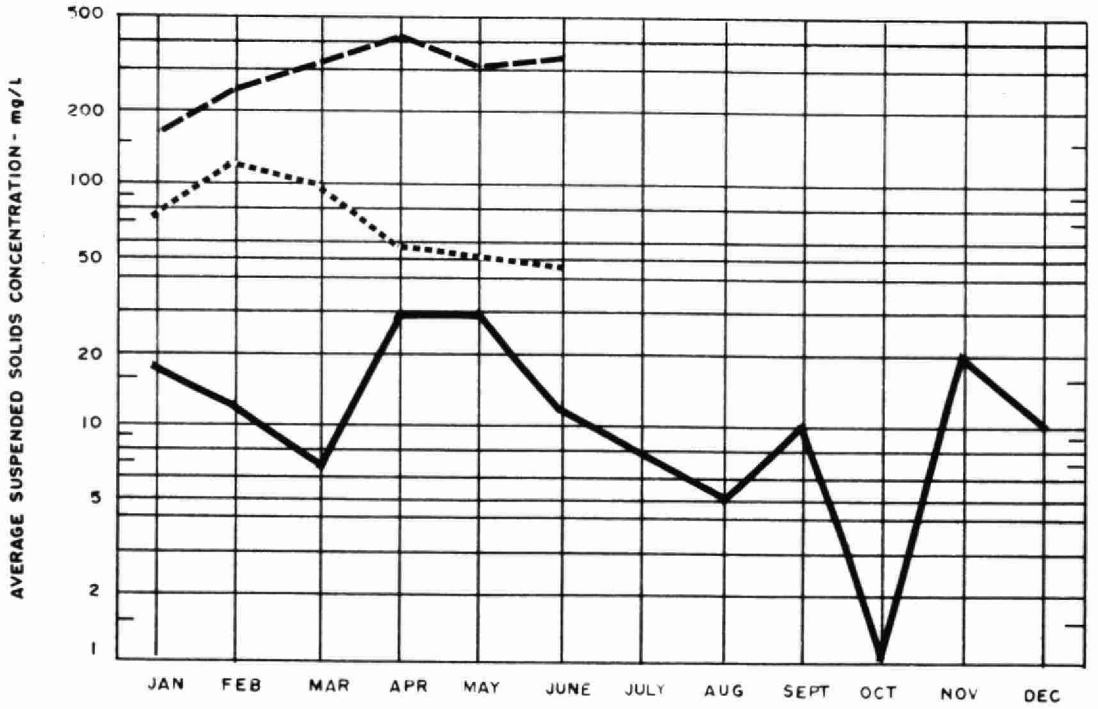




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

SUSPENDED SOLIDS





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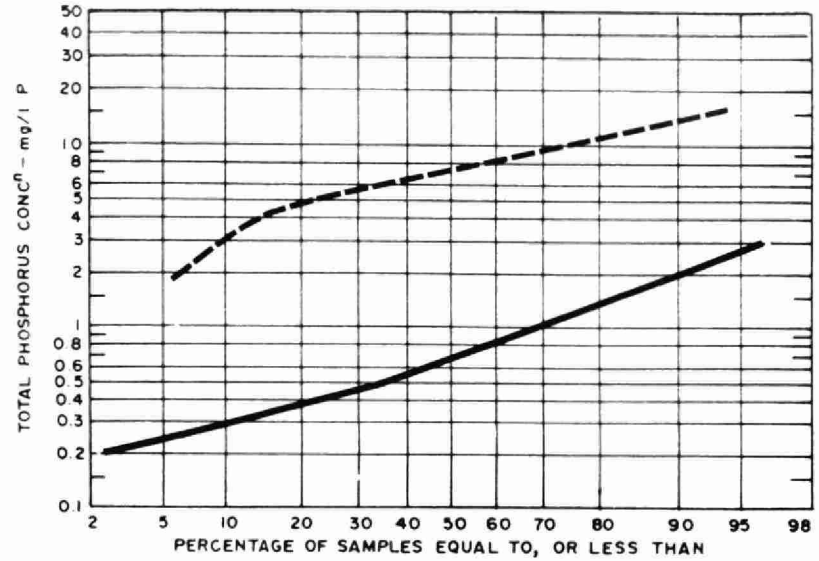

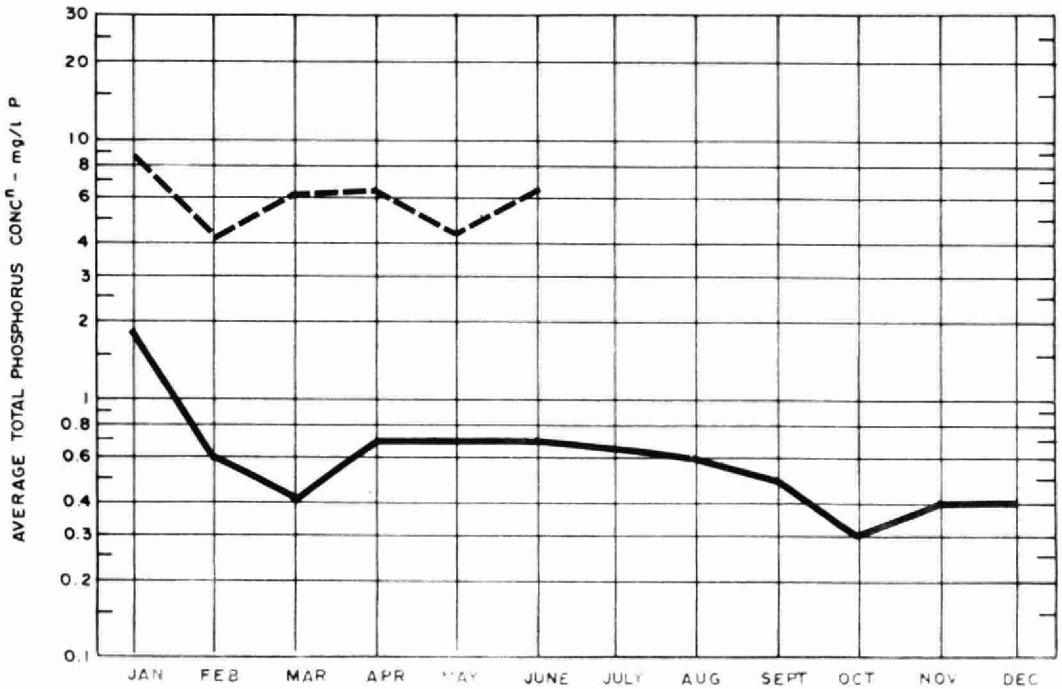

PLANT INFLUENT

PLANT EFFLUENT

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED 10^3 pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	0	1.0	3.7	71	90	2990	0.07	1.7	0			59.4				352
FEB	0	1.0	4.3	125	235	2850	0.12	1.0	0			78.4				466
MAR	0	1.2	4.4	99	163	2650	0.10	1.1				4.2				25
APR	0	0.5	4.1	57	120	3780						0				0
MAY	0	0				5710			0			9.8				58
JUNE	0	0		44	30	2450			20			0				0
JULY	0	0				2480			0			0				0
AUG	0	0				4250			0			0				0
SEPT	0	0				4220			281			254.8				1510
OCT	24	0				3690			149			161.0				955
NOV	0	0			210	4240			0			0				0
DEC	0	0				4510			0			13.0				78
TOTAL	24	3.7	-	-	-	-	-	-	450	-	-	580.6	-	-	-	3444
AVG.	cu. ft/mil gal			82	137	3650	0.10	1.3	150			83				492